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Journal of the Society of Arts.

FRIDAY, DECEMBER 12, 1862.

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NOTICE TO MEMBERS AND INSTITUTIONS.

Exhibition Catalogues.

Her Majesty's Commissioners for the International Exhibition of 1862 have placed at the disposal of the Council, for distribution to the Members of the Society and Members of the Institutions in Union, copies of the Industrial and Fine Art Catalogues.

Members of the Society desiring to have copies of each of these Catalogues may have them on application, either personally or by an authorised agent, at the Society's House.

Secretaries of Institutions in Union may have a limited number of copies placed at their disposal for distribution amongst their Members, on making a similar application.

General Index.

A general Index to the first ten volumes of the *Journal* will shortly be published, which may be bound with the last volume. Members who desire to have copies (which will be supplied *gratis*) are requested to apply to the Secretary as early as possible, in order that a sufficient number may be printed.

EXAMINATIONS, 1863. — NOTICE TO INSTITUTIONS AND LOCAL BOARDS.

The attention of Secretaries of Institutions and Local Educational Boards is specially called to the following extract from the programme of examinations for 1863 :—

5. A detailed list of the chairman, secretary, and other members of each Local Board, giving not only their names but their addresses and designations, should be submitted to the Council of the Society of Arts before the 1st of January, 1863. In some cases the Local Educational Boards comprise such large districts that, for the convenience of the Candidates, Branch Local Boards have to be formed within the Districts. Whenever this is the case, the names and addresses of the members, both of District Board and of its Branch Boards must be forwarded to the Secretary of the Society of Arts. All changes in the composition of the various Boards now in existence, or to be formed hereafter, should be immediately notified to the Society of Arts.

FOURTH ORDINARY MEETING.

Wednesday, December 10, 1862.

The Fourth Ordinary Meeting of the One Hundred and Ninth Session was held on Wednesday, the 10th inst., Thomas Winkworth, Esq., Member of the Council, in the chair.

The following candidates were proposed for election as members of the Society :—

Bradley, John	129, Fore-street-hill, Exeter.
Duck, George N.	Blue House, Stockton-on-Tees
Gowland, Edward B.	1, Brecknock-street, Camden Town, N.W.
Hewlett, Alfred	Haigh Colliery, near Wigan.
Lister, John	Shibben Hall, near Halifax.
McBride, Dr. Henry	Gilford, Co. Down, Ireland.
Mitchell, Wm. Lawrence	22, Richmond-street, S.
Noden, Edward Byron	Terrace House, Old Kent-road, S.E.
Rotheram, Alexander	Holloway Mills, N.
Scott, Thomas	36, Randolph Cliff, Edinburgh
Scott, William	12, Westbourne place, Eaton-square, S.W.
Smyth, Samuel R.	Dover.
Steinthal, G. A.	14, Little Fore-street, E.C.

And as Honorary Corresponding Member,

Mairet, Sylvain	Locle, Switzerland.

The following Candidates were balloted for and duly elected members of the Society :—

Avery, Joseph	81, Great Portland-street, W.
Bowman, George	(J. Bowman and Son), Langholm.
Brown, Alfred	115, Whitechapel, E.
Canton, Edwin, F.R.C S.	30, Montague-place, Russell-square, W.C.
Crichley, Henry	Bromfield House, Birmingham.
Duppa, Duppa	Longville, Wistanstow, Shropshire.
Edwards, Charles Stuart.	64, Friday-street, E.C.
Fenton, Hugh	Queen's Ferry Wire Rope Works, near Flint, North Wales.
Geary, John	4, Francis-ter. Prince of Wales-road, Kentish-town, N.W.
Goss, W. H.	Stoke-on-Trent.
Gregory, Henry	Herne-hill, Dulwich, S.
Hamilton, Edward	500, Oxford-street, W.C.
Hobbs, Thomas	15, Earl's-court-gardens, Old Brompton, S.W.
Hutton, John	10, Mark-lane, E.C.
Klaber, Herrman	Albion-pl., London-wall, E.C.
Knewstub, Fabian	33, St. James's-street, S.W.
Launspack, Louis	9, Upper Berkeley-st. West, Hyde-park, W.
Mathews, George	Upper Russell-street, Bermondsey, S.E.
McDougall, Archibald	11, Upper Thames-street, E.C.
McLachlan, James	35, St. James's-street, S.W.
Mitford, Bertram	Cheltenham.
Moore, Charles	Rose Hill, Swansea.
Morant, Robert	91, New Bond-street, W.
Norris, J.	36, Little Russell-street, W.C.
Pilcher, W. F.	Morgan's-lane, Tooley-st. E.C.
Quarm, Thomas	Rose-villa, St. John's-road, Brixton, S.
Radclyffe, Leopold Henry	30, Hanway-street, Oxford-street, W.
Rivière, Robert	196, Piccadilly, W.
Scott, Henry D.	Market-place, Boston, Lincolnshire
Scott, Robson J.	8, Whitefriars-street, E.C.
Shaw, James	2, Royal Exchange-ct., Glasgow, and 150, Leadenhall-street, E.C.
Smith, Charles	43, Upper Baker-street, N.W.
Stephenson, James	Patent Wire Rope Works, Millwall, E.
Thompson, Henry	Albert-cottage, Weybridge-heath, Surrey.
Watkins, Herbert	215, Regent-street, W.

Willans, Jacob Geoghegan	Belfast, Ireland, and 9, Phillimore-terrace, Kensington, W.
Willoughby, de Eresby, Lord	142, Piccadilly, W.
Wood, Wm. Robert	Carlisle-house, Brighton.

The following Institution has been taken into Union since the last announcement:—

Gilford (Co. Down, Ireland) Young Men's Mutual Improvement Society.

The Paper read was—

ON THE CONSTRUCTION OF LABOURERS' COTTAGES AND SANITARY BUILDING APPLIANCES.

By John Taylor, Jun., Architect.

The subject to which I wish to direct your attention this evening, is in an architectural and artistic view, a very humble one, but, in a philanthropic sense, one of unsurpassed importance.

It may be asked, why do I take this subject upon myself before this Society? In my earlier years my efforts in this direction were fostered by this Society, and rewarded by the decoration I now feel proud to possess before you. Since then, more than twenty years of professional experience have added to my knowledge in these matters, and I now find myself one of the 30 of the earliest of the 3,000 members of this Society.

I know that a considerable amount of elocution is necessary in addressing so large an assembly, and this I have not; so I must ask your kind indulgence while I endeavour to explain my subject.

During my practice, whenever my attention has been called to any defects in our existing mode of building, I have sought and often found remedies; these have become the subject of some ten patents. My object has certainly not been to become an inventor, but they have, as it were, fallen to my lot, and, besides inventing them, I have been enabled practically to carry them out and introduce them into numerous buildings of every description, and I may safely say they have all been recognised as improvements, and paid for by my clients as such, though of course up to this time they have not been applicable to the labourer's cottage.

Representations of some of these buildings are now on the wall before you, viz., stations on the London, Chatham, and Dover railway; the Sevenoaks railway; villas in Surrey, Dorsetshire, Middlesex, &c.

We are all, no doubt, well aware of the efforts that have been made to improve the condition of the labourer by improving his dwelling, and great has been the benefit obtained; but I think our over anxiety to provide him with a habitation that should come up to our own views and acquirements, rather than to what his wishes, habits, and inclination aspire to, have retarded much of that widespread benefit which might otherwise have been expected. For my own part, I would rather give the labouring multitude something better than they now have, than endeavour to make a few model labourers and labourers' homes.

Our experience, I think, has already taught us that, to build proper abodes for the working classes, will not return a remunerative per-centage; but we may, I think, with a reasonable prospect of success, endeavour to give the labourer something better than he has, and so gradually prepare him for the more perfect abode which we all hope in future time he may obtain.

I think a very grave error is made when a single penny is expended in architectural effect. Finishings and decorations, whereby the dwelling is reduced in size and the proper accommodation decreased, so that turn-up bedsteads are found in sitting-rooms, and other such like expedients resorted to, even when such embellishments are carried out with every regard to economy, tend to increase the difficulty of producing a plain, humble, healthy cottage at a reasonable expense; and hence the inducement to resort to many of the cheap shams and building contrivances of the present day. We are so apt for ourselves to require architectural effect, genteel appearance, and decorations within a limited rental, that it is becoming apparent that no honest builder can get a sufficiently remunerative rent. It is only the so-called "duffing builder" that knows how to set about this. It cannot be wondered at that, in the endeavour to build the labourer's cottage, resort is so often had to what is understood by "cheap building," although the after experience in repairs discourages those who have been misled, so that injury results where benefit was expected.

I will now explain the manner of constructing damp-resisting foundations, ventilated floors, or paving, dry walls, and a tight, warm roof.

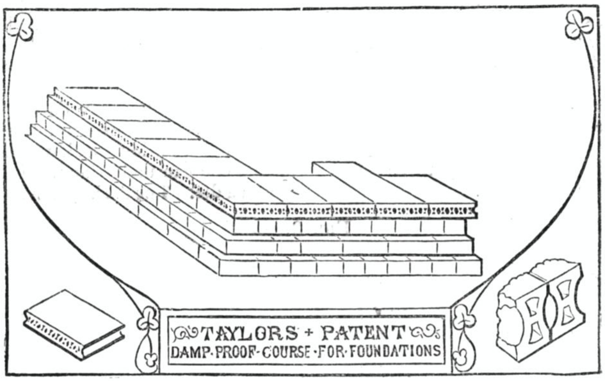
The question that must arise in your minds is, that granted all these are improvements, how are they applicable to a labourer's cottage? My answer is, that a mode of effecting this has recently occurred to me, and, although it has become the subject of recent patents, I now declare that any who wish to be supplied by me with such materials for the purpose only of constructing dwellings for the labouring poor, shall have them free from all royalties or patent charges whatever, so that a larger, healthier, and cheaper cottage may be built at a less cost than has before been done.

I will, however, first direct your attention to the plan of a double cottage, which contains on the ground floor a living room or kitchen, 12ft. by 12ft.; a washhouse or scullery, 11ft. 6in. by 9ft.; a larder, 5ft. by 3ft. 6in.; a store, 3ft. 6in. by 3ft. 7in.; and a large closet to the living room. In the wash-house are a good oven, grate, copper, sink, and dresser, and in the living room a range, with oven and boiler. There is a back-door out of the scullery, and a door of communication between scullery and kitchen. The entrance door is in front, where there is a small lobby to the living room and staircase; this lobby has also a pent externally for shelter. Upon the floor above is a bedroom for the parents, one for girls, another for boys; out of the parents' room is a linen closet and cupboard. The whole is comprised within four walls, without breaks, presenting the least surface to the external atmosphere, a great object in this climate. All the flues are collected into one central shaft; the roof is a simple lean-to, from party-wall to side-wall. There are therefore no gutters, vallies, or other intricacies of roof, and all the water falls into one length of eaves-guttering, down one down-pipe into a rain water-butt. No doubt some portions of this plan have often been seen, but its simplification and adaptation to my peculiar mode of construction is what I claim your attention to. It would have been easy, and certainly very tempting, to have added breaks and gables, &c., and so to have produced a more picturesque effect. The difficulty has been to avoid this, and economise cost in every way.

I will now proceed to explain the several peculiarities of construction, and, firstly, as to the foundations.

No doubt you have often observed and felt the ill effects of damp rising up the walls by capillary attraction, the most fruitful source of an unhealthy dwelling. Stagnant and impure matters in the soil are sucked many feet up the walls, and become evaporated into the rooms—the higher the temperature the quicker the evaporation, and the renewal of the noxious supply. I recollect that when the Victoria Church, in the Isle of Dogs (the church so celebrated as connected with "Londoners over the Border"), was about to be built, I was asked to visit the spot. I found the soil a deep bog; the cottages of the poor in the neighbourhood showed fearfully the effect of damp, rising up the walls some six or seven feet in height; the wretched inhabitants, as is too frequently the case, excluded as much air as possible, and so kept up the temperature, that the evaporation filled the rooms with foul vapour, and the result was ague and fever; and I think you would discredit me if I stated the quantity of "pitch pills" consumed as a cheap, and, therefore, the only available, specific. The frost, acting upon the damp walls, destroyed the mortar and injured the bricks, and the ruin of the building was evident. In the church alluded to, my patent damp proof course (Fig. 1) was introduced, and the damp so effectually cut off, that an observer, looking through any part of the walls at a height of a foot above the ground, could see the traffic on the other side. The usual means employed hitherto to prevent this were either a layer of asphalte, sheet lead, or slates in cement; and recently, in attempts at *cheap* cottage building, we hear of a layer of "gas tar and sand," a layer of "gas tar and powdered slate," a layer of "boiling pitch," a course of "calico immersed in tar and pitch." I think we may next expect to hear of a "Holloway's Damp-Resisting Ointment."

FIG. 1.



In the construction of foundations, three essentials have been hitherto partially effected by as many separate means:—

1st. Damp prevented rising up the walls by the means before named.

2nd. The introduction of air by air-bricks at intervals.

3rd. Strengthening and bonding by the use of rough York stone, &c.

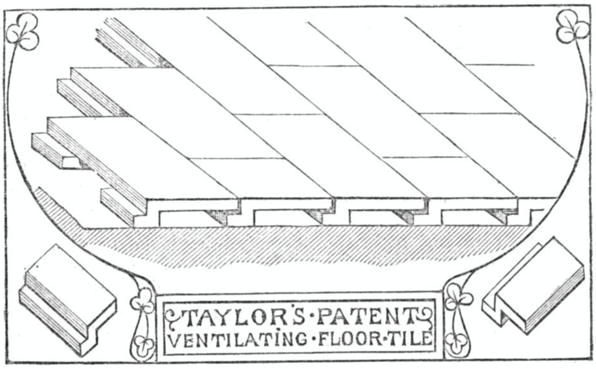
In my Damp-Proof Course these effects are combined:—

Damp rising is completely prevented by a highly vitrified and non-absorbent material, having an air space through the joints.

Air is supplied through the perforations, securing a circulation beneath the surface of the walls.

Strengthening and bonding are effected by the use of an imperishable material, capable of sustaining 600 feet of vertical brickwork upon each superficial foot. These three requirements are economically combined in the one article, with a saving of one course of brickwork in the height of the building.

FIG. 2.



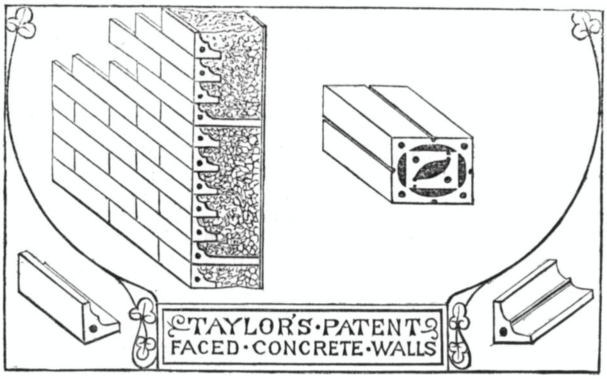
The advantages to health and comfort that a properly-constructed wooden floor possesses over stone, brick, tile, or other paving, are well known; the latter, we find, laid upon the earth, or some other medium in connection with it, and damp rising is again the cause of cold and discomfort; and if the surface of the ground beneath any single tile becomes soft or defective, that tile sinks, the surface becomes uneven, and the paving is quickly dilapidated. My Patent Ventilated Paving Tile (Fig. 2) for floors or pavement is made with an under projecting rib or flange which, when laid, forms the bearer of the tile, and extends beyond the edge, receiving upon it the other edge of a similar tile, so that the rib not only acts as the bearer of the tile of which it forms a part, but it also forms the bearer of one edge of the next tile, leaving a space under the tile for the free circulation of air, which is there introduced through the Damp Proof Course before described, and, that the air may circulate transversely, as well as longitudinally, in the spaces under the tiles, openings are left in the ribs for the air to pass laterally through from the space under one row of tiles into the space under the next row. In beginning to lay down a pavement, a row of tiles is used, having an additional under rib; the air thus circulates freely under every part of the pavement, insuring its perfect dryness, and it becomes, in all respects, a suitable floor for a cottage, at a far less expense than any description of wooden floor, and, when we consider that there is no necessity for floor joists and sleeper-walls, the saving is very considerable.

We now come to the bulk of the building, viz. the walls. Ordinary brickwork, one brick thick, I consider totally unfitted for the abode of any human being. The single brick readily absorbs rain and moisture and the through mortar joint quickly conveys it from the exterior to the interior. Horizontal bond is studied and insisted upon by all careful builders, but, strange to say, vertical bond is never thought of; hence we see the one-brick wall, perhaps strong enough to bear the intended weight, but not stiff enough to stand even during its erection. Thicker walls are too expensive for a labourer's cottage. In seeking for a substitute, where economy is to be considered, the bulk of the material must be found upon the spot or in the locality, and nothing is more generally to be found than the necessary materials for concrete.

We all know that concrete is ordinarily composed of gravel and lime, and is in its proper place when in a trench of a foundation. Being retained therein, and prevented spreading, it will sustain any weight we like to place upon it, but when used in building walls, it is not so retained, and is incapable of enduring cross strains, when the boards, which are, in fact, the moulds in which the cast has been made, are removed. The construction mainly depends upon the adhesive quality of the lime or cement, and when it is no longer retained, cross strain and other causes produce cracks and settlement, and the action of the weather upon the surface soon produces premature decay.

To understand how my Patent Cottage Walls are constructed, observe the diagram on the right hand in Fig. 3, representing a hollow block which certainly at first appears what no one can understand. It is made by pressing clay through a die. The dark portions represent hollow spaces through which the heat readily acts throughout the block where desired, during the process of burning in the kiln, and, when standing on end it occupies the least possible kiln room. It has been partially separated by knives in the die, but holds together firmly enough during burning in the kiln and carriage to the intended building. Just before use, the bricklayer or labourer readily separates it into six bricks specially adapted for the reception of concrete.

Fig. 3.



It will be readily seen that in all the several processes of manufacture, six bricks have been produced instead of one. These blocks, or bricks, when used, are laid by the bricklayer on each side of the intended wall, distant from each other the thickness of it, as shown at the left hand of Fig. 3. The labourer then lays concrete in the trench thus formed, the vertical pressure upon the flanges counteracts the outward thrust, and thus the concrete is retained as in a trench, the mould wherein the cast was made remaining to protect the wall from damp, and to prevent the decay of the external surfaces of the concrete by the weather.

Thus each course is thoroughly constructive, and even first-class houses may be thus built to any reasonable height. In a cottage wall, 9 in. of thickness is sufficient, requiring only one course of blocks externally, with the bonding blocks at intervals, and the use of a moveable board on the inner face during its construction. After this a little rendering inside with lime, or Scott's Cement, which is better, finishes the inner face.

It is calculated that a rod of ordinary brick-work requires 4,352 bricks, which (at, say 32s. per 1,000) costs £7. One rod of the patent walling requires 1,450 of my bricks, which (at 25s. per 1,000), for labourers' cottages, only costs £1 16s. 3d.; add to this the cubical contents of the concrete, 9⅔ yards, at 16s. 8d. (calculating gravel at 2s. per yard, and lime at 10s.), £1 12s. 8d., together; £3 8s. 11d. the rod of 14-inch work, as against £ 7 the rod of brickwork.

Now, as to the weight; the 4,352 bricks weigh 9 ton 14 cwt.; the 1,450 of my bricks weigh 1 ton 9 cwt. We thus see that these blocks can be sent in a railway truck or otherwise long distances, where we could never hope to send bricks. When my blocks for facing ordinary brick-work are used, they cause continuous hollow air spaces to be left within the wall, and a great saving in bricks results. Vertical bond is obtained, and the yielding mortar joints are strengthened; and I have found that the walls of a house thus constructed become so quickly dry, that they may be papered almost immediately.

We now come to the crowning matter of my subject, viz., the roof.

Slate is generally applicable for roofing, as it admits of being laid to a flat pitch, and is light, but is so absorbent of heat that rooms in the roof become unbearable.

Plain tiling has not this objection, but must be laid to a steeper pitch, is much heavier, being nearly of double the thickness, and requiring greater strength of timber.

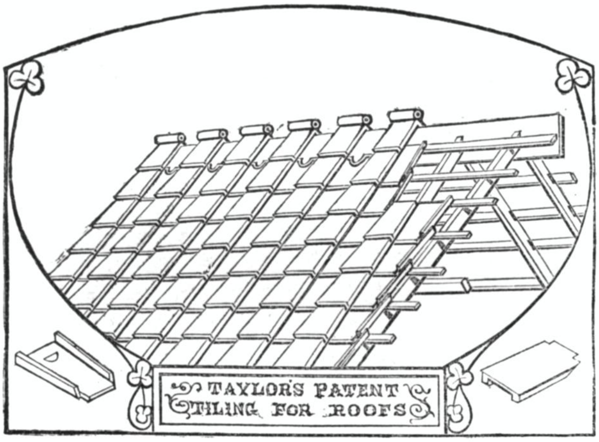
Pan-tiling is lighter, but so pervious to weather, as to be only suitable for sheds and similar buildings.

My patent tiles may be laid to as flat a pitch as slates; their weight is 656 lbs. per square. Plain tiling is 1,624 lbs. per square. Thus it appears that it is less than half the weight of ordinary tiling, pleasing in appearance, and combines all the advantages of slates and tiling without the drawbacks attending them. The price is £4 10s. per thousand, being enough to cover a square for sixteen shillings.

You will observe on the diagram (Fig. 4) that I make a tile wider at one end than at the other, and having flanges raised at two sides, the narrow end becomes the lower end of the lower or trough tile fitting into the wider end. The same tile reversed becomes the upper or capping tile; the two notches in the flanges enable each tile to take an even bearing upon the tile beneath, and allow all the ends of the tiles to range horizontally. The nib upon the upper part of the tile gives the necessary gauge, and firmly secures the tiles the one to the other.

The ridges are formed of a V shape, having all their joints lidded or capped. These ridges are applicable for any ordinary slated roof, and all screw holes and their defects are avoided.

FIG. 4.



Having now set before you such particulars as time wil permit, I will only just briefly conclude by stating that all the patent materials necessary for the erection of the pair of cottages will be as follows:—

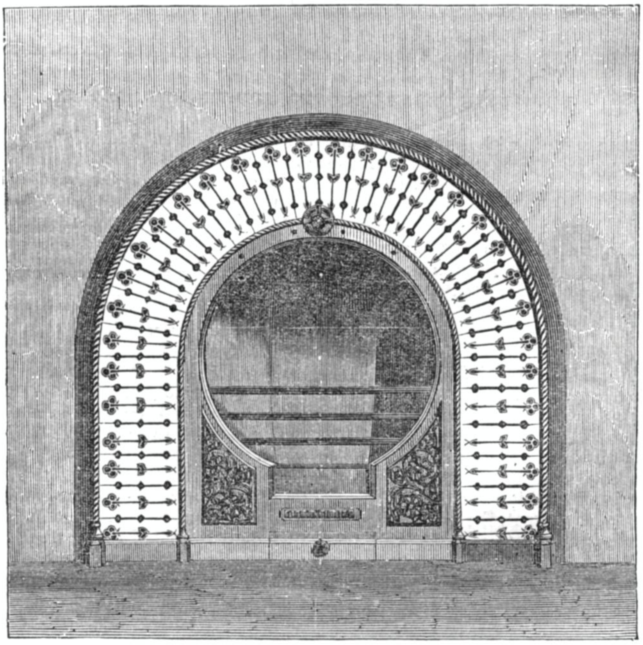
The damp-proof course	£40 0 0
The ventilating paving	
The wall blocks	
The roofing tiles	

I think we may now, therefore, reasonably expect that the remaining works may be done for such a cost as that a larger, healthier, and cheaper cottage may be available for the labourer than hitherto.

Having directed our time and attention thus far to the labourer's interest, let us look a little to our own, and at this season what is more constantly forced upon our attention than the discomforts that appear to be almost inseparable from our own firesides? We all know what is considered the next evil to a scolding wife.

Smoke, undeprived of its carbon or soot (which is fuel) contaminates the atmosphere, disfigures a decays ou

FIG. 5.



FRONT VIEW OF THE SMOKE CONSUMING AND VENTILATING GRATE.

buildings, and an incalculable amount of annoyance arises from smoke and smoky chimneys. Mechanical contrivances to effect the combustion of smoke are ineffective when left, as they must often be, to the care of our ordinary domestic servants. There is an annual loss in London alone of seventy-five per cent. of heat, (an acknowledged fact) which escapes up the chimney without adding to the warmth of the apartment. The calculation of this does not afford us any consolation in our discomfort.

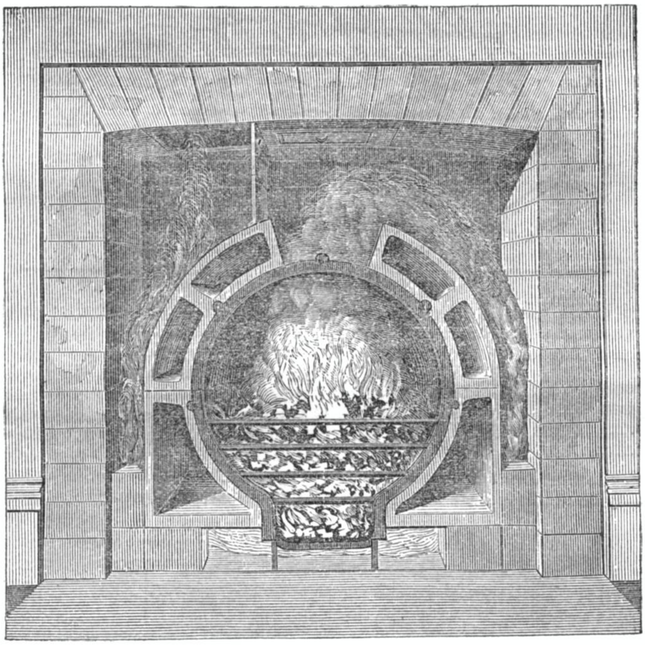
The air necessary to support combustion makes its way to the fire from door or window, chink, or crevice, and visits our backs with hurtful draughts in proportion to the warmth we are receiving in front.

A frequent cause of the chimney smoking is that it becomes filled with the air from the apartment, which, rushing in above the fire, lowers the temperature and renders the flue incapable of acting as a sufficiently rarefied ventilating shaft, and often incapable of even conveying away the smoke at all.

The peculiar features in my patent grates (Figs. 5 and 6) are as follows:—

When the register is closed, the smoke, having ascended from the fuel, and become mixed with atmospheric air, descends, and passes through the hottest part of the fire, where the carbon or soot in the smoke is consumed as fuel.

FIG. 6.



VIEW WITH FRONT REMOVED, SHOWING THE ACTION.

The heat which would have rushed up the chimney, calculated at 75 per cent., passes down and around the hollow fire lumps of which the grate is formed, and the external air, with which these communicate, enters the apartment in a large body, moderately warmed, not heated.

The apartment is supplied with moderately warmed instead of cold air, from door or window, and thus thorough ventilation is effected.

The cold air cannot rush up the chimney; the flue is therefore rendered a powerful extracting shaft for ventilation, and a highly rarefied, and consequently effectual, passage for the products of combustion, thus obviating another fruitful source of smoky chimneys.

Should the warmth be too great, the register can be opened and the action of an ordinary grate will take place.

In addition to these advantages, the fire is always under perfect control, and may at all times be brought to any degree of brightness.

Its combustion of fuel is so perfect, that what remains in the ash-drawer, after the day's consumption, if proper attention has been paid, might be taken away in the palm of the hand.

The occupation of the sweep will be nearly dispensed with.

I shall at all times be most happy to give any further explanation or information at my offices in Parliament-street.

DISCUSSION.

The CHAIRMAN said that the Council had just been informed that Major-General Tremenheere, who was to have presided that evening, was unable to leave his home, owing to the illness of his son, which they regretted, as well on his own account as on that of the meeting, the subject of the paper being one in which that gentleman took great interest. It was difficult, indeed, to exaggerate its importance, and it was fortunately one that just now engaged the attention of the promoters of social economy. It was one to which their late lamented Royal President addressed his active and practical mind, and it would be remembered that he erected a pair of model cottages near the Exhibition of 1851, which had been re-built, and were now to be seen on Kennington-common. The distinguished friend, also, of the labouring classes of this great metropolis, Mr. Peabody, was so impressed, during his long residence in

England, with the growing and urgent necessity for better and healthier habitations for them that, with a munificence beyond all precedent, he placed in the hands of trustees the sum of £150,000 to be devoted to this benevolent object. He (the Chairman) having, within a few days, had occasion to see that gentleman, informed him of the subject of this evening's discussion, when he expressed his regret that in consequence of the painful illness under which he was then suffering, it would be quite out of his power to be present, but he should be glad to receive particulars through the *Journal*. As regarded the paper just read, the Chairman need only remind the meeting that any gentleman who devoted his talent and energies to the development of this important branch of social science, and placed the results before the Society for examination and discussion, gave the best evidence of his earnestness, and was entitled to the gratitude of the community.

Mr. J. **Bailey Denton** said he should be sorry in any way to depreciate the paper just read by Mr. Taylor on this very important subject, but as he represented not the architectural interest, but that of agriculture, they must allow him to make a few remarks—not so much upon Mr. Taylor's paper as upon the subject generally. The paper was a very ingenious one, and he must admit that the drawings by which it was illustrated were most explicit; but there was to his mind one very manifest omission, and that was the consideration of the cost of the structure. Very much had been said and written on this subject by a great many people for many years past, and yet at the present moment we were really as much at sea, as to what description of cottages we should build, as we were 15 or 20 years ago; and he could not but feel that the paper had not dealt with the question which he thought most of those present had come to hear. The cost of cottages resolved itself practically into the rent to be paid for them, and it was no matter of congratulation to be able to build cottages that labourers could not pay rent for. Much had been endeavoured to be done by prizes and the efforts of various societies; but it was a fact that not one of those prize designs had provided for buildings that could be erected for the money which was stated as a necessary condition to the premium offered. Representing, as he did, a company which was employed very largely in the building of agricultural property, and in ascertaining the lowest prices at which, with due consideration to the sanitary requirements of the day, labourers' cottages could be built, and having himself inspected a great number of drawings, plans, and specifications for them, he was there to confess that they had not been able to build cottages for which the farm labourers of the country could pay a rent which, in itself, would give an adequate interest on the capital expended. The average cost, at the present moment, of cottages with three rooms, with water supply and the necessary fencing, was £260 a pair. He was speaking, not merely of his own experience, but advisedly, from the experience of those who were largely engaged in building; and as it was necessary, in order to encourage the building of cottages, that they should give a return of six per cent. upon the outlay, the rent would amount to £15 12s. per annum, or £7 16s. per cottage. Now, the utmost that a farm labourer could afford to pay was limited to one-seventh of his earnings, and, therefore, taking the average agricultural wages at 10s. or 11s. per week, the rent which could really be afforded was not more than 1s. 7d. or 2s. per week, which was equal to about £5 a year. Now, inasmuch as 6 per cent. upon an outlay of £130 per cottage represented £7 16s. a year, it was clear that there remained £2 16s. yet to be made up from some source in order to encourage builders to erect these cottages. That £2 16s. might fairly be paid, partly by the farmer who employed the labourer, and partly by the owner on whose estate the cottages were built, the farmer employing the labourer having the advantage of the man living on his farm, could, it was admitted, pay something towards the rent; and if they assumed that he could afford to pay 1s. per week, or £2 12s. a year, there would yet remain something for the owner to pay to make up the deficiency. £260 a pair for cottages was too large a cost, and it was an object worthy of this Society, and of the country at large, to endeavour to reduce the expense from £260 to about £200 a pair. If they could succeed in doing that, there was very little doubt they would be able to build cottages for the poor which were suitable in all particulars. As an illustration of the difference that existed in the various designs that had been placed before the world as being worthy of adoption, he might mention the fact that the cubical contents of these cottages varied as much as from 7,000 to 12,000 cubic feet. At some future time, he proposed laying before the agricultural community a tabulated statement of all the cottage designs that had received prizes of various kinds, and the extraordinary difference between them would strike anyone who had paid any attention to the subject; but no point would strike them more forcibly than the fact that none of those designs could be built for anything like the price estimated. He thought the essential object to be kept in view was a reduction of the cost of building cottages to a sum upon which the labouring population of this country could afford to pay a fair rate of interest in the shape of rent. Unless they did that, they practically did nothing, and he hoped the Society would accept what he had, with some diffidence, proposed, viz., the offering of two prizes for cottages that should be *built*—not merely designed, for there was a great difference between designing and building—a pair of cottages which should be built for £200. It might be asked why he had put them at that sum? The reason was this. In all the designs that had received commendation or prizes, there were none the estimates for which exceeded that sum; but he challenged Mr. Taylor, whose drawings were so explicit, and whose statement was so interesting, to produce a pair of his cottages built for £200, subject, of course, to one condition, that they should be built substantially, and in accordance with the rules of the Enclosure Commissioners, who had certain regulations as to substantiality. He would ask Mr. Taylor what his estimate was for a pair of cottages built upon his plan.

Mr. **Ebenezer Clarke** had listened with much pleasure to the remarks of Mr. Taylor in reference to the cottages he proposed to build, and practical men interested in this subject must feel indebted to that gentleman for many of the suggestions he had made. He (Mr. Clarke) was happy to state, as bearing upon the remarks just made, that he held a contract, which was now in course of execution, for building cottages as low as £225 per pair, which were of larger cubical content than those described by Mr. Taylor. The front room was 12 feet by 10 feet, the back room being about the same size, with a wash-house at the back, and containing a capital oven, copper, sink, and dresser, and a good water-closet. There were two good rooms upstairs, and there was a porch in front. A pair of cottages upon this design had been placed opposite the eastern dome of the International Exhibition during the present year, and at Walthamstow there were sixteen pairs of cottages now erecting at the contract price he had stated. The cost of those cottages, including the freehold of the ground, would not exceed £130, and a rental of 2s. 6d. per week would give £6 10s. a year as the interest upon that amount; but it was said the landlord would expect more than that. Even if 3s. 6d. per week, or £2 12s. additional for rates and repairs, were required, for that rental they might have cottages within five miles of London which could be let to pay a fair remuneration upon the outlay. By this means a great difficulty would be overcome. Mr. Scratchley had laid down a good principle for the purchase of cottages by labourers. He had proposed that some of the money subscribed to the savings bank should be appropriated, at 4 per cent., to the purchase of labourers' cottages. If a cottage could be bought for £100, the tenant would only have to pay 4 per cent. interest as rent, and to insure his life for £100, so that by the payment af £6 a year the cottage would be his in fourteen years, with the advantage that if he died in the first year, he would be able to hand over the cottage to his widow as an annuity of £10 for life. With regard to cottages in the country for agricultural labourers, there might be some difficulty, and he thought a lower price than he had mentioned would be a necessary condition. With reference to Mr. Taylor's system, it was a question with him whether country bricklayers would be able, generally, to carry out the designs, and to use the materials recommended by that gentleman, so readily as to build with them substantially as they were accustomed to do under the old brick-and-mortar system.

Mr. Charles Bagnall could confirm the remarks of the last speaker, inasmuch as he had almost completed twenty cottages in Yorkshire, upon the plan referred to, at a cost for the smaller ones of £160 the pair, and for the larger ones of £200 per pair. Those cottages originally contained only two bed-rooms, which did not admit of a proper division of sleeping apartments for a family, but at a cost of only £10 he had added another bed-room, and then the cottages had been rendered really suitable habitations for a family,

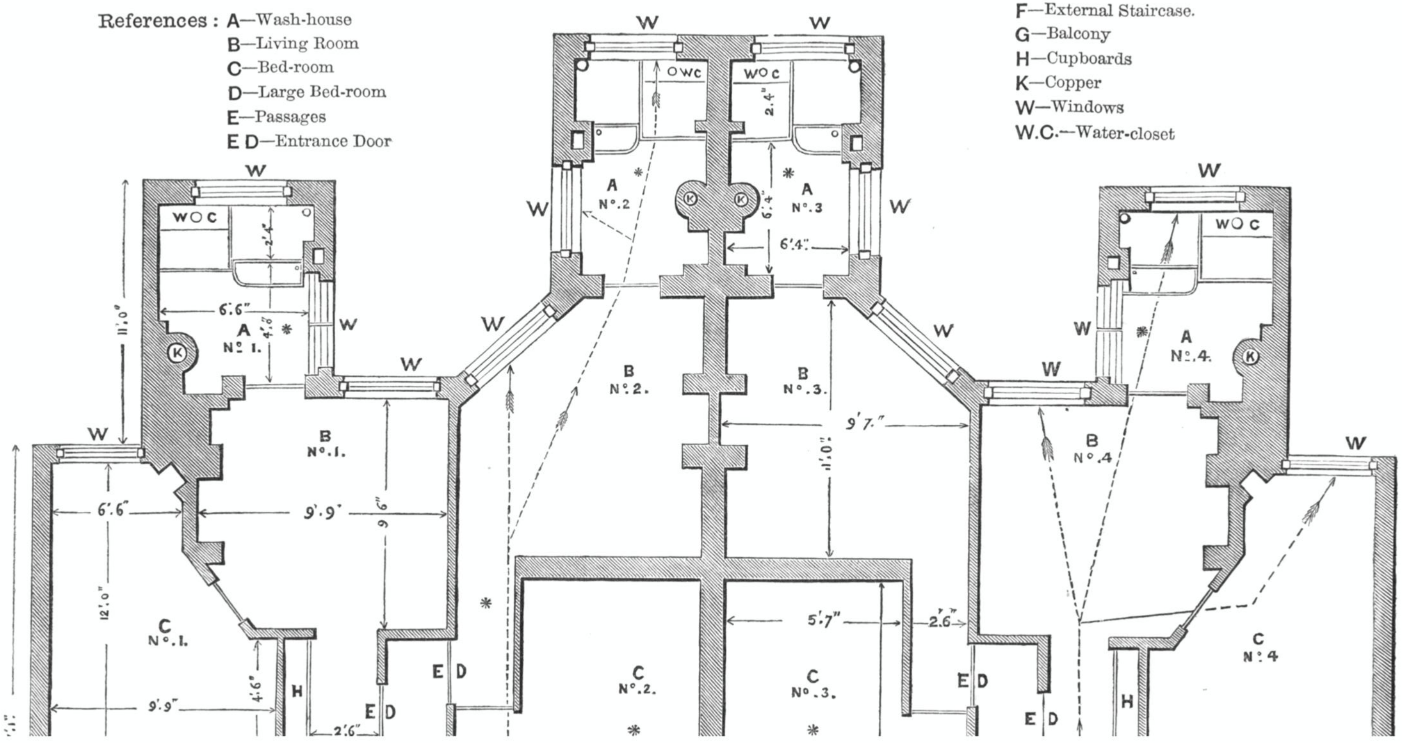
Mr. Robert Rawlinson had listened to the paper with great interest, but, looking to the diagrams before them, it occurred to him that there would be some difficulty in getting country bricklayers to put these materials together. He differed from Mr. Bailey Denton as to the question of labourers' cottages paying or not paying. He had studied this subject for the last twelve or fourteen years, and he held that it was not a question of mere pounds, shillings, and pence, as regarded the payment of rent. It was a question of moral and sanitary importance to the whole nation, and the time must come when they would have to look upon it in a national spirit, for they were now beginning to understand upon what principles society was based, and how they could best be enabled to ensure its permanence and its safety. The late Royal President of this Society, with that far-seeing intellect for which he was so distinguished, regarded this question as one of national importance, when he placed before the public those model cottages at the Exhibition of 1851; and that great man who now sat upon the throne of France had also seen and appreciated it. He appreciated the fact that the poor were in this respect powerless to help themselves; therefore, the movement must be made by those above them, and, he (Mr. Rawlinson) said advisedly that, let them work the problem as they might, they must not split straws about plans and cost; but the time was come when they must understand that a community of people must not be allowed to grovel in the mire like the lower animals, or to exist as they did in many parts of Ireland at the present time, where human beings herded together with the brutes, and being born as brutes, and living as brutes, how could we expect them to feel otherwise than as brutes? In this wealthy country he could take them to towns of large populations, where the artizans were earning from 35s. to 40s. per week, and yet could get nothing more than room tenements to put their families into, not that they were unable or unwilling to pay for better accommodation, but simply because nothing better could be obtained. How, then, could the working man raise himself in the social scale? The poor could not build for themselves, and it must be a national concern. It was argued that the question resolved itself into one of rent. He said no, and even if it did, if they worked out the problem in all its elements, it would be seen that the cost came upon the public at large, who had to pay for the neglect and misery, directly and indirectly by pauperism, by vice and crime, and by a depreciated human race. They paid it directly in the shape of provisions to be dispensed by the relieving officer. Medical men could point to rows of cottages from which came all the fever that infested a neighbourhood, and into those cottages the mass of the money went, which was expended from the poor-rates every week, and in some cases the owner of the houses, living at one end of the row, would watch for the visits of the relieving officer, and pounce upon the money for rent. Such an evil as this could only be met as a national question at least, and if they took a Christian view of it, as a Christian question. There stood rows of habitations in which it was impossible to live without the occupants sinking in the social scale. An artizan coming from the country into a large town was obliged to take his wife and young family into room tenements, where it was impossible they could live healthily, and they were stricken down by typhoid fever; it ended in either the widow following her husband to the grave, or with her children becoming permanent inmates of the union workhouse. The hollow bricks which Mr. Taylor had recommended were no doubt valuable, but he regretted that that gentleman had taken out patents for inventions of this character; he thought it doubtful whether they would be valid, for he himself had used hollow bricks years ago. He (Mr. Rawlinson) took credit for some ingenuity, but he could conscientiously say he had carefully eschewed patents; for he knew, by experience, that it was very seldom indeed that patents paid; and, looking at the question, he could see no elements of remuneration arising from the patenting of articles of the description brought before them this evening; but if Mr. Taylor found it otherwise in his practice, that was an answer to him. The advantage of concrete walls, as regarded economy, would no doubt be felt in many parts of the country, and the merits of the damp proof course could not be denied. He had made perforated bricks as early as 1845, but without a patent; and, as regarded the tile floor, it was very ingenious, but was not a plan he should be inclined to adopt. There was an old proverb that they should "never make holes for rats, except they left holes for cats." Now, there was plenty of room for rats and mice in these holes, but not sufficient for cats. Some remarks had been made as to the roof being perfectly tight upon Mr. Taylor's plan; he hoped that referred only to its being water-tight, because of all curses in a house, an air-tight roof was perhaps the greatest. The same might be said of air-tight walls and fittings, which might be made so perfect as to become the perfection of bad construction. He had been in houses where the carpentering work was so perfect as to amount to a positive evil from the entire prevention of anything like healthful ventilation; and, on the other hand, if mechanical means of ventilation were provided, they were apt to be closed by the occupants of the house through some fancied discomfort in the way of draughts, and, therefore, they were often obliged to disguise the means of giving proper ventilation to dwellings. He hoped this Society would give all the aid in its power—not that cottages should be built which the poor man was able to pay for—but such as would enable him to live as became a Christian, and properly to perform his duty to society.

Mr. Bishop wished to be favoured with some further explanation as to the stove which had been exhibited by Mr. Taylor; he should like to know in what way the smoke eventually passed off, for this did not appear from the explanation already given. It was stated that upon the smoke being evolved from the coal it was carried back, by a flue at the side of the stove, through the fire again, and the carbonic acid gas in it would, he thought, have the effect of deadening the flame in the grate. Mr. Bishop also offered some general remarks upon ventilation, and pointed out simple means adopted by him for carrying it out. With respect to the price stated in the paper of £40 for the materials of a pair of cottages, he wished to be informed whether that was the cost of the concrete walls alone.

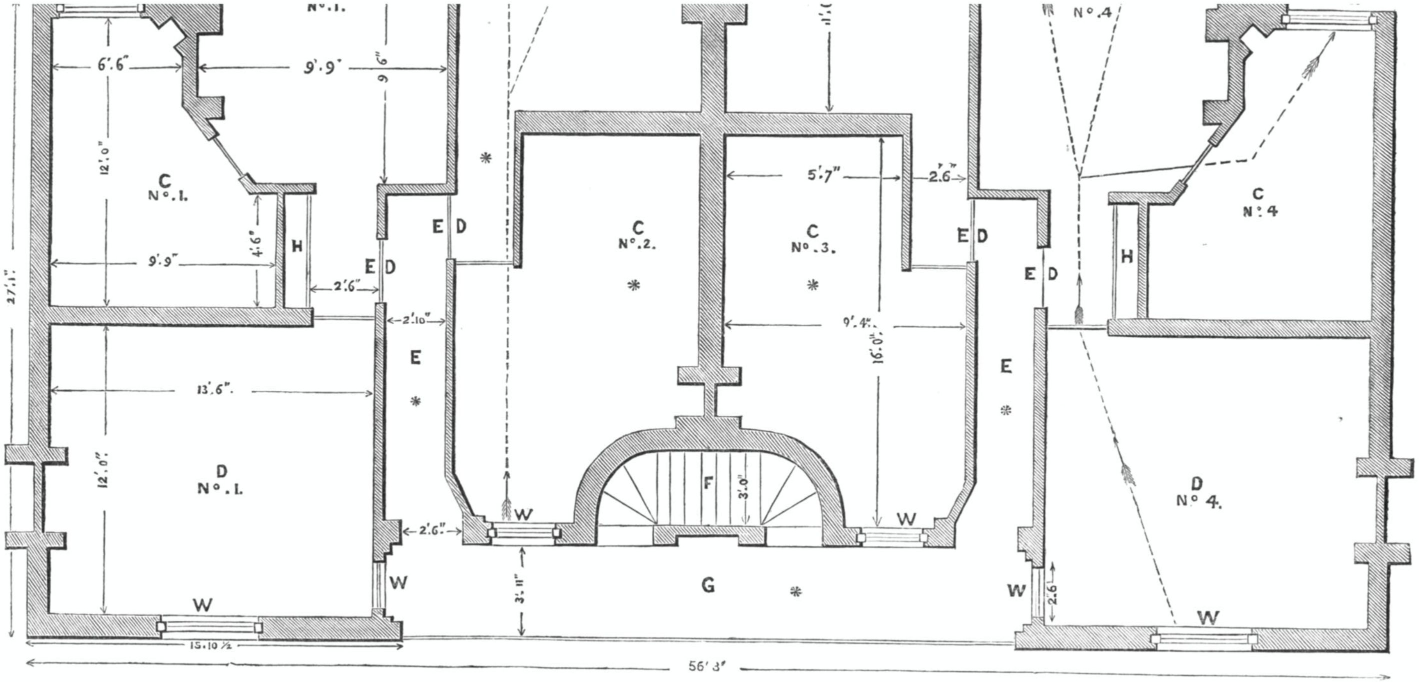
Mr. Geo. Godwin, F.R.S., being called upon by the Chairman, had nothing particular to add to what had been said this evening, but would express the very strong

Ground Plan of a Flat, Nos. 1 and 4 having Four Rooms, and Nos. 2 and 3 Three Rooms in each Letting.

The stars indicate that the floors are constructed of Allen's patent fireproof material, of which also the staircases and roofs are composed.



References : A—Wash-house
B—Living Room
C—Bed-room
D—Large Bed-room
E—Passages
E D—Entrance Door
F—External Staircase.
G—Balcony
H—Cupboards
K—Copper
W—Windows
W.C.—Water-closet



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conviction he felt, no doubt in common with many others present, of the immense importance of this subject, and supposing it turned out that well-built, well-drained, and properly ventilated cottages could not be built for the labouring classes at such a sum as they could pay a proper rent upon, he said boldly they were not sufficiently paid for their labour. They were not getting out of the land that amount of sustenance, and that provision of protection from the weather, which, as human beings, they were entitled to receive. His own notion was, that cottages for the poor could be built to pay, and he thought they owed a considerable debt to Mr. Taylor for the amount of ingenuity and intelligence which he had brought to bear upon this subject, and though they might not see at first sight that the means suggested would materially cheapen the cost of cottages, it was obvious that the damp-proof course here introduced was a most important building material, and he was quite sure, as it became known, it would be most extensively used. He thought the difficulty with regard to these materials was that they could not get workmen without education to use them properly. Many years ago he had assisted a gentleman in the country in forming concrete and brick walls for cottages, the hollow in the wall being filled with concrete. It was a very ingenious plan, but he thought not so cheap as that of Mr. Taylor. He (Mr. Godwin) had, however, found it quite impossible to get other builders to take up the plan, and it gradually died out, although walls of six and seven inches thick, built in that way, had stood in a perfect state for twenty years, effectually resisting the damp, and forming altogether most efficient work. That was the difficulty which all inventors had to strive against. He had no doubt concrete was plentiful in many parts of the country, and where these bricks of Mr. Taylor's could be put into the hands of intelligent master-builders or foremen, very good and cheap houses could be constructed with this material. It had occurred to him to witness, both in town and country, the frightful condition in which the great bulk of the labouring population lived—agricultural as well as manufacturing. Many individual landlords were doing much to remedy that state of things. The Yorkshire Agricultural Society and many others had given prizes and were doing all they could to advance this object, but the field was so enormous that the efforts of a few individuals were almost useless; they scarcely touched the evil, and, at the present moment, the great bulk of the labouring population were living in such a way that a high state of health was impossible—in such a way that the evil deeds they committed were mainly the results of the condition in which they lived, the effects of which no amount of after education could counteract. All moral principles were eradicated from the minds of the children, and, do what they would, with the present system of national education, they could not remedy the damage which was done in infancy. What was the result of all this? The habitations were tenanted by a population sunk in ignorance and moral degradation. In the courts of Drury-lane and Gray's-inn-lane, there were thousands of human beings but little better than pagan savages: they knew nothing that was right; and those were the class—the dangerous class—who were at the present time making themselves so fearfully known and felt in our public streets. He had said thus much, to show that the subject before them was one of the greatest importance; and he felt that they were indebted to every gentleman who brought his intellect and practical experience to bear upon it. He begged to tender his thanks to Mr. Taylor for his valuable paper.

Mr. G. F. Wilson, F.R.S., said a very ingenious paving tile had been exhibited by Mr. Taylor, and he should be glad to be informed what was the cost per foot of that tiling, apart from the cottage generally.

Mr. Edwin Nash remarked that no material had been shown by Mr. Taylor as that which he intended for the quoins of his building, but he presumed he had some arrangement for that purpose which would match with the other portions. In some of Mr. Taylor's cottages he had seen that ordinary bricks were employed at the quoins. He thought that was an imperfection, because the quoins of a building were the parts which generally held the greatest quantity of moisture; and in plastering a new structure internally, the difficulty was to get the angles of the walls dry at the same time as the other portions. With regard to the damp-proof course, he thought that, to be effectual for the purpose for which it was designed, it ought to be placed at a not less distance from the ground than eighteen inches. The place where the splash of the rain went against the external wall was generally the dampest place, and if this damp-proof course were placed within a short distance of the ground, and the rain-splash went above it, the end it was intended to answer would not be gained. There was a tendency in the surface of the ground round a building to become relatively higher by the lapse of time, and that which had been eighteen inches from the ground originally would, in forty or fifty years, be below the level.

Mr. Liddle remarked that he was disappointed at the course which the discussion had taken. He felt, as all of his profession must feel, a deep interest in the well-housing of the poor. He resided in a district of the metropolis where a large number of the houses had been taken down for street improvements and railways, which had had the effect of dislodging a large amount of the poorer population, and thrusting them closer and closer together into places inaccessible to any persons but the relieving officer and the police, which caused their health and morals to be so fearfully deteriorated. He was in hopes that some practical suggestions would have been thrown out as to how these great evils were to be met, but the discussion had, for the most part, turned upon the cheapness with which cottages could be built for farm labourers in the country, leaving untouched the great question of providing for the moral and physical condition of the crowded masses of the working population in the Metropolis. It was a remarkable fact that whilst the population was largely increased, house accommodation had decreased; the consequence was that more persons were crowded into the houses which remained accessible to the poorer classes, and where there were formerly eight there were now, on an average, at least ten persons in a dwelling. He sincerely hoped that at some future time this question would be taken up with the seriousness which its importance demanded.

Dr. Greenhow expressed a similar disappointment to that of the preceeding speaker, at the course which the discussion had taken. He viewed the question in a different light to most of those who had spoken upon it. He felt that the great point was to build cottages especially with reference to the health of the inmates; and he hoped to have heard this evening of some fresh building appliances which would conduce to render the cottages in town more healthy than they had been hitherto. With regard to the size of which cottages should be built, Mr. Taylor had given the dimensions of twelve feet square for the rooms, but he had omitted to state the height, whether eight feet or less. Even that would afford small cubical space for a room which was occupied by a family during the daytime. The rooms above being covered by a partially slanting roof would have a still less cubical content. He did not care about the cost of the cottages; but he would say emphatically, having had long experience in those diseases which emanated from living in confined breathing spaces, that cottages of the dimensions stated, supposing the rooms to be eight feet in height, would be unwholesome, and would tend to those diseases of the lungs which arose from living in an impure atmosphere. With regard to ventilation, the only provision that he had heard mentioned in the paper was the beautiful stove of which they had had a description, and he inferred that such stoves were intended to be placed in the cottages spoken of, though they appeared to be too expensive for such a purpose. With that exception, he had heard of no means for providing ventilation. He did not offer these remarks in disparagement of the paper, but only as bearing upon the important subject which they were met to discuss.

Mr. C. Asprey expressed the interest he felt in this subject, and his surprise that the influential classes of the metropolis had not taken it up more warmly; if they had done so, he thought they would have met with great support, particularly if they had only laid the matter before men engaged in business. He believed the labouring populations of large towns suffered in respect of house accommodation tenfold more than those in the country; and he only hoped this paper and discussion might be the forerunner of some movement which would be beneficial to the London poor. He was an employer of labour in various forms, and he had long felt that the working-classes, with means of paying for better dwellings, were unable to obtain healthy and comfortable habitations in London. Looking to the miserable courts and alleys of Drury-lane, for example, the space now occupied by those wretched tenements might be made available for the healthy dwelling of many more families than were now located there in filth and squalor, if the houses were built upon a proper principle. He hoped there were liberality and riches enough in this great city to afford the means for furnishing the poor man with a comfortable home, so that he might bring up his family in a proper way, with greater attention to their morals than was at present the case. There were many who, like himself, would be willing to aid in forwarding this great object, and in order to make a start, he would lay down £100, either as a gift or at a low rate of interest, and if a thousand others did the same, they would at once have a fund which would be the means of doing a vast amount of good in this important matter.

Mr. Squire said, having paid some attention to ventilation, he thought, for all ordinary purposes, rooms could be thoroughly ventilated by means of the ordinary ventilators placed opposite to one of Arnott's in the chimney, and when these were placed high up, they occasioned no inconvenience from draught to the inmates of the room.

Mr. Jones mentioned that upon the Duke of Buccleuch entering upon his new residence at Dalkeith, the workmanship of the fittings of the rooms was so perfect that they were all filled with smoke, which was caused by the rooms being so air-tight as to prevent proper ventilation through them, and ventilation was effected by carrying a shaft through to the roof, and from thence bringing air down to the sides of the fire-places, without disturbing the rooms in any way.

Mr. Seddon said, having seen Mr. Taylor's inventions in action, he was happy to bear his testimony to their efficiency as far as he could judge. These were materials with which cottages and larger dwellings could be built at a much cheaper rate than before; and, as regarded sanitary appliances, the plan introduced by Mr. Taylor must be admitted to be a great improvement upon the old system. With respect to the getting these new materials properly put together by country bricklayers, he would state that he had found no difficulty in getting the work done. He had used a great many stoves of the description brought forward this evening, and although the one exhibited was ornamental and expensive, the principle had been extensively adopted in barracks and government offices, in a cheaper form. The great difficulty with regard to ventilation was where to let the air in, and it was no use to let fresh air in, without providing a means for the egress of the impure air. That was fully provided for by Mr. Taylor's stove; and where the air could not be brought in heated, it must be admitted above the level of the head, which could be done in any volume required. If there was sufficient egress for the vitiated air, the apartment would be thoroughly ventilated.

Mr. White observed that it was to the owners of property they must look for the remedy of existing evils, more especially in the agricultural districts, where a reluctance was manifested to building cottages for the poor, on the ground that it would increase the poor rates; in fact, he had known instances in which cottages had been pulled down, and the labourers had had to walk several miles to and from their work. The remarks as to the necessity for better home accommodation for the poor applied with equal force to the populations of large towns. He could point to one place where, out of 1,200 houses, nearly 1,000 were rated under £7, whilst the majority of the workpeople earned large wages, and could afford to pay for better houses.

The Chairman said he had now a pleasing duty to discharge, in proposing a vote of thanks to Mr. Taylor for his valuable paper. He was sure this would be unanimously accorded.

The vote of thanks having been passed,

Mr. Taylor, in reply upon the discussion, said Mr. Denton had expressed his disappointment at no plan having been brought forward for building cottages for a less sum than £260 a pair; but he was answered in that respect by the gentleman who followed him, who declared that he was now engaged in erecting cottages at £225 the pair. If he (Mr. Taylor) had brought forward any specific price at which the cottages he described could be built, he should probably have been met with Mr. Denton's very proper remark, that it was only an estimate, which was not always to be relied upon. He had not come before them to advocate any particular plan of labourers' cottages, but merely to show them how the walls, roof, paving, and other things, might be built better and cheaper than they had been hitherto. He had shown that the materials for those portions of the building could be furnished at half the cost of brickwork. With respect to the dimensions of the room, a dozen medical gentlemen would probably hold as many different opinions as to what was absolutely a necessary size for a healthy apartment. With regard to the damp proof course, one gentleman had objected that it afforded facilities for the encroachments of vermin, but in his practice he had never found this inconvenience occur. Another gentleman had spoken of the necessity of having the damp proof course a sufficient distance from the ground to be out of the reach of the rain splash. In the plan he had placed before them, he had shown the course in the position for its most economical adaptation, and it was at the option of the builder how high up the wall he chose to put it. He might mention, with regard to the alleged difficulty of getting ordinary workmen to use these materials, that his plan had been experimentally adopted for military huts at Chatham, and the materials were very readily made up by the sappers employed for the purpose. The walls for huts of 40 feet long were only 6 inches thick, and the reports as to the durability of that plan of construction were so satisfactory to the authorities, that they gave orders for the erection of huts of 200 and 300 feet upon the same plan at Hounslow. He added, that he felt regret that his paper had not come up to the expectations of some gentlemen present, but he still hoped he had been able to offer some useful suggestions on the all-important subject of the improvement of the dwellings of the labouring classes.

The Secretary announced that on Wednesday evening next, the 17th inst., a Paper by Mr. Robert Hunt, F.R.S., Keeper of Mining Records, Government School of Mines, "On the Mines and Minerals of the United Kingdom," would be read.

The following letters have been received:—

Sir,—As Mr. Taylor's paper cannot fail to give a fresh impulse to the erection of improved dwellings for the working classes, you would oblige me by availing yourself of this opportunity for making known that my Economic Museum at Perryn House, Twickenham, contains a more complete series of model designs for town and country than is perhaps to be found in any other Institution, together with illustrations and estimates of building materials, fittings, and furniture, and other indications for the guidance of those who are anxious to raise the condition of the poor.

It may be well to mention that all admissions are gratuitous, my object being purely one of popular instruction and improvement.

I am, &c.,
T. TWINING.

SIR,—It is desirable for various reasons that the general subject of Sanitary Building Appliances, in reference to the working classes, should be separately treated under the subordinate divisions of Town Homes and Country Homes; the different conditions of life under which the labourer exists in the one presenting points of consideration altogether diverse from those of the other.

In the one, systems of sanitary appliances must be directed to the individual case; in the other, the workman must be looked upon as a unit in a total, if I may so say, requiring a perfectly separate cell in a compound hive, and not an isolated nest.

Country Homes.—It is not my purpose to discuss the question from the rural point of view further than to state, as the result of my observations and inquiry, the undoubted fact that the equalisation of the poor rates would in a great degree tend to improve the home of the farm labourer and generally of those workmen whose occupation is remote from large towns.

Not unfrequently a whole parish may be met with, the proprietorship of which is limited to one or two landlords, and these will not permit the erection of the cottages necessary to house the families of the labourers working in the parish, with even the most moderate provision for the decent sleeping and general accommodation of the inmates.

In many cases the labourer has to walk weary miles morning and evening throughout the year, to and from his work, totally unnecessary for exercise, because his toil in the open air is sufficiently exhaustive for his generally spare diet, nor does he bring a fresh set of muscles into play, as would be the case with many town mechanics if exposed to a similar long walk home.

This extra and extreme exhaustion can only be avoided by an unseemly heaping together of human beings in a small compass, and the mere massing of matter is in itself seldom consistent with health, either moral or physical.

The horses are carefully tended and separately stalled upon the farm, the scene of their labours; the human workman is dismissed in the cold and rain to a dreary trudge to his far distant home.

Even when the proprietor of a suitable spot for the erection of a factory or mill seizes his advantage to build such factory or mill, the increased rental is taken, but the hands are often compelled to seek their homes in some more lenient parish or in a neighbouring town. It appears to me that these harsh arrangements derive their origin from the present system of levying poor-rates, whereas, if the poor-rate was equalised throughout the whole country, the principle of selfish economy which now excludes the poor man from a home near his work would cease to operate, and the increased value of the land from the erection of cottages thereon would induce their sufficient construction in all desirable and suitable places.

This poor-rate question lies at the foundation of the inferior accommodation of our country cottage homes.

The mode in which the details of garden-plots, drainage, water, sleeping-accommodation, ventilation, are to be arranged and secured, I do not propose to enter upon, my object is rather to occupy a small space in your *Journal* in treating of the second division of the subject:—"Healthy town homes for the labouring classes," and more particularly to direct the attention of the members of the Society to some laudable exertions which are in progress for accomplishing the great object, at rents intended to be fairly remunerative to the proprietors, yet not exceeding those now being paid for far inferior accommodation.

Town Homes. — Investment should be commercially remunerative.—It should be laid down as a fundamental principle that in all arrangements, buildings, or proposals for the class of homes we refer to, such returns to the capitalist as will induce the erection of whatever number of these tenements may be required, must be shown to be safely, readily, and permanently obtainable.

However desirable the outlay of money may be from generous or charitable motives, we may safely assert, in reference to the matter now under discussion, that—beyond its employment in the erection of buildings as an experiment, putting forth, or illustration of any system—it is worse than useless, because the principle of charity cannot be depended upon to adequately meet the vast requirements of the case, demand and supply on this plan holding no commercial relation or natural connection. Its management is expensive, and, worse than all, it must necessarily, to a less or greater degree, induce, among the occupiers of dwellings thus charitably constructed, the idea that they are receiving something for which they do not pay, in itself unpleasant to the right-minded, and injurious to self-reliance and independence of character.

Mr. Allen's Plan of constructing Healthy Dwellings for the Industrial Classes.—The originator and inventor of the system illustrated by the subjoined wood-cuts, Mr. Matthew Allen, of Worship-street, Shoreditch, London, bases his whole scheme upon the calculation that the amount now paid by the working classes for home accommodation will secure a satisfactory interest upon the capital invested.

The two pillars upon which Mr. Allen depends for the remunerative nature of his constructions are:—

1st. The extensive use of a peculiar material in lieu of the ordinary building materials.

2nd. The arrangement of his individual homes in the compound dwelling.

One of the great features in the construction of a block of buildings which many separate and independent families or persons are to inhabit, should be the adoption of all available means for the protection of the whole from fire, and for its isolation, should fire occur in one compartment. To secure this most important object, to effect a great saving in the cost, and to give a substantial, enduring character to the buildings, a new and peculiar combination of material is employed, possessing all the characteristics, and yet at less than one-third the cost of stone.

The combination is thus described in Mr. Allen's patent:—"My invention consists in obtaining and forming a new material for building purposes by the combination of cinders, slags, coke, culm, clinkers, or other calcined substances of similar character thereto, possessing an irregular, uneven or porous surface, with Portland or other cement, in the proportion of about one part thereof to about three parts of any of the other substances, the whole being mixed together with sufficient water to bring it to a requisite consistence, so as to enable it to be placed or poured into moulds for the purpose of giving it any desired shape or form. These moulds are to be faced with zinc or any other suitable metal which will prevent the adhesion of the material thereto while it is setting. This material is to be used for the making of walls, floors, roofs, steps, slabs, lintels, chimney-pieces, and the like, and these are to be strengthened, where necessary, by placing iron bars or ribs therein edgewise."

It is proposed to use moulded fire-places, window-cills, and stairs made of this material in the construction of buildings for the poor, and the floors are likewise to be composed of the same materials.

The following is the mode of proceeding in constructing a floor:—In the formation of floors flat iron bars are placed edgewise across the room, at distances of about 24 inches, these are punched with holes, 24 inches apart, through which holes round iron rods are passed, and for an additional security, although the precaution may be considered entirely unnecessary, small pieces of iron rods, a quarter of an inch square, are placed across the round bars, at intervals of eight or ten inches. The size of the flat iron bars above mentioned would, of course, depend upon the length of bearing, say, for a fourteen feet bearing, iron half inch by three inches, and, for shorter bearings, the size would be diminished in proportion.

The mode of forming a floor is as follows:—Boards are placed on the under side, similar to a centre, by which means the space between the ironwork is enabled to be filled in to the level of the upper edges of the flat bars, thus forming a compact floor three inches in depth. The iron-work forming such floor, when filled in on all sides with the aforesaid material, becomes rigid, and the flat iron bars are thus prevented from bulging sidewise; they are capable of bearing almost any amount of weight.

By constructing the floors as above described, the strength of the building is greatly increased, as the iron-work may be continued through the party walls. The balcony may also be formed without the necessity of any support or bearing whatever in the front, at the same time being equally as substantial as if supported by columns. The floors formed with this material, although as strong and durable, are less than half the weight of stone, a very important point in the construction of all buildings. This system renders the use of timber almost entirely unnecessary in the main portions of the buildings, and only the internal fittings of the rooms need have any portions of wood used in their construction. Not only is the plan economical and safe, but the advantage in reference to the deadening of sound is considerable over any wooden flooring that might be adopted.

The second point upon which Mr. Allen relies for the success of his enterprise is the arrangement. By including many tenements in one block, and by constructing one external staircase for twenty lettings, great economy of wall and space is effected, and, there being no internal staircases, all the room within the walls is available for household accommodation.

It is not pretended that this plan is more advantageous than any other system of compound dwellings, except so far as the saving of space by his mode of arranging the rooms and staircases may be superior to any other scheme. Having regard to the national love of domesticity, and to secure complete privacy and thorough control by the tenant over the whole of the rooms he rents, each letting is so arranged as to form a perfectly separate and independent tenement, containing, in itself, all necessary appliances and conveniences for securing those comforts which the humblest Englishman is desirous of possessing, and clothed in the idea of home. Privacy is secured, and the character of a separate house maintained by the system of—1. Outside general staircase. 2. Separate private door to each occupation. 3. Providing each set of rooms with its own water-closet, coal compartment, and wash-house with copper. 4. The power of completely shutting up or thoroughly opening and ventilating the separate lettings at the will of the tenant, thus giving perfect internal control to the occupier.

The method of constructing the outside staircase is thus described in Mr. Allen's patent:—

"I propose to construct buildings in a new and improved manner, by economising the spaces which the staircases usually occupy, and to render them fireproof by dividing or insulating the staircases from the building of which they form a part. This I propose to accomplish by arranging the stairs (which are to be made of incombustible materials) in a recess formed in the outer wall of a building, which recess is to extend from the foundation to the roof, and have no opening whatever on its inner side, but is to be provided, where necessary, with openings or doorways on its outer face leading to balconies (which are also to be formed of incombustible materials), fixed at the level of, and giving access to, each of the floors or flats of the building. By means of this arrangement of staircase and balconies, each floor or flat will be rendered totally distinct from, and independent of, that one below or above it, so far as regards any internal communication therewith or therefrom."

Reference to the ground plan, sent with this *Journal*, will show the position of this external public staircase and the private entrance doors to each letting, marked E D, E D. Privacy is further secured by the mode in which the windows are arranged. So essential has Mr. Allen deemed this point of privacy in connection with the power of ventilation, that he has even sacrificed the symmetry of some of the rooms to secure this object. From an inspection of the dotted lines (the arrows show the course of a current of air) on the plan, it will be obvious that each tenant may cause a thorough current of air to enter one room, or pass through his set of apartments, without interfering in any way with his fellow occupants.

Another important point with Mr. Allen has been so to arrange the windows, that the outlook of one tenant shall not be in the direction of his neighbour's apartments. Although built in a block, the arrangement of separate waterclosets, coal apartments, wash-house and copper (see plan) for each tenancy secures the essentials of a private home. The roof is made flat, and being accessible by the external staircase, is intended to be used for drying the washed clothes.

The question in relation to the Peabody Grant.—This is not the occasion to go into details, but it may be fitting to enumerate certain points which seem to bear intimate relation to the subject.

1. The town workman, wherever he resides, can, and will, only afford, within very narrow limits of variation, a certain amount of his wages for rent. The rental, therefore, of a compound home is practically a fixed quantity, wherever the situation of the dwelling may be, in this respect totally differing from the rental of the better class of houses, which depends upon two elements, locality and cost, and not upon the income of the occupiers.

2. In cities and large towns ground space is too valuable to give proper area for the individual homes of the working classes. They must, therefore, either live afar or be inconveniently and unwholesomely crowded, or the desirable accommodation must be obtained by building upwards, and even with the greatest practicable elevation, a hive for the industrious could not possibly be constructed in many situations, on account of the high ground rent.

3. The cost of building, however low it may be brought by Mr. Allen's plan, or any other, may be considered as uniform throughout the same city or neighbourhood.

4. Out of a given rental, which might be fairly shown to be receivable from a block of homes, a certain proportion cannot be exceeded for ground rent, if the remainder rental is to be ample enough to induce a capitalist to build the houses.

5. If, therefore, the rental and cost of erection are fixed quantities, it follows that the ground rent may, in many cases, be the turning point of profit or failure.

6. A ground rent of a certain per-centage of the gross rental might be endurable, and yet the buildings be profitable as an investment, whereas a slightly increased rate might be sufficient discouragement to turn the scale against the speculation.

7. In what mode, then, could the Peabody Gift, which is understood to be intended for the benefit of the working classes of London, be made legitimately available in aid of this cause?

8. Assuming that a ground-rent should pay 4 per cent. upon the purchase, if the trustees should invest a portion of the gift in land, they would be entitled to expect an income of 4 per cent. on their outlay, but if, in doing so, they should select spots suitable for the erection of such homes as have been described, and would be willing to accept 2 per cent. instead of 4 per cent.—the 2 per cent.

lost going in easement of the ground rent, payable by the builder—the advantage to the working classes would be the erection of homes in many healthy, advantageous positions, in which they would otherwise never be built.

9. This would seem to be a proper mode of applying a portion, at least, of the fund, without detriment to the character of the working-man;—there would be no charity apparent—he paying the same rental—and the builder expending the same amount of money in the erection of the homes; only, but most importantly, suitable situations which are not now obtainable might then be rendered available.

10. The trustees should not, under any circumstances, go into the building question; that should be left to private persons, by whom it would be so much better managed; their assistance should take the form of purchasing, and, and having reference to the special object of their trust, accepting a lower ground rent than they might otherwise reasonably demand and obtain.

Doubtless the spirited promoter of this project, with whom this idea originated, will bring the matter in an adequate manner under the notice of the trustees.

Gentlemen who may take an interest in the question now discussed have an opportunity of inspecting, while in course of construction, such a group of homes as I have described.

The block represented in the plan forwarded with this *Journal*, and also illustrated below, are nearly finished building, by Mr. Allen, in Mark-street, Paul-street, Finsbury, for Mr. S. H. Waterlow, who has set the praiseworthy example of testing the interesting problem whether it is not possible to provide on a sound commercial basis, a healthy decent home for the labouring man at a moderate rent.

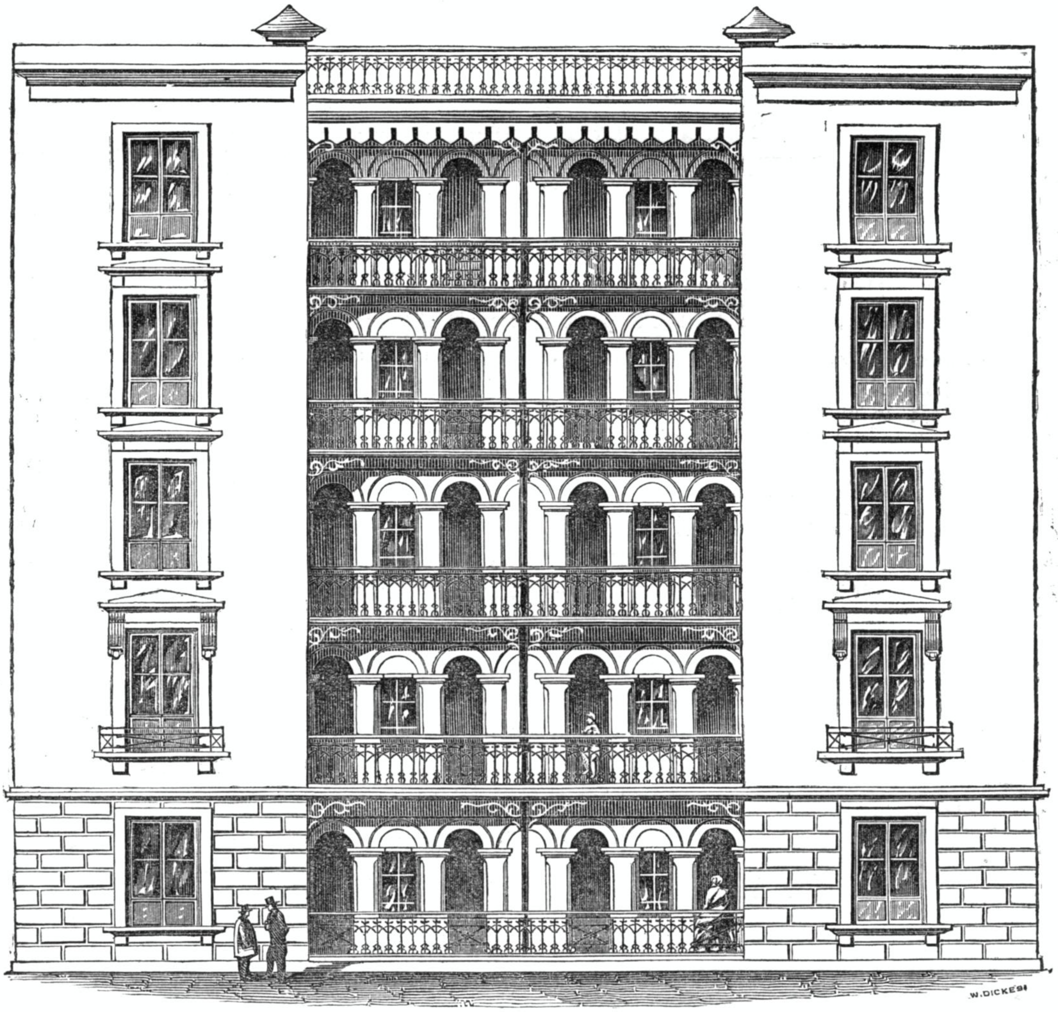
While writing the preceding remarks, the letter of the Paris correspondent of the *Times*, from which the following is an extract, came under my notice.

I subjoin it for the purpose of showing from what an entirely different point the same or at least an analogous subject is viewed and taken up by the two nations, although the French mode seems in its general features very much to resemble the arrangement of our Sailors' Homes.

I am, &c.,
WILLIAM STONES.

(FROM OUR OWN CORRESPONDENT.)

The Government has determined to accomplish a reform in the dwellings of the operative classes in Paris, and is about to commence by the construction of a *cite modele* on the Boule-



HEALTHY DWELLINGS FOR THE INDUSTRIAL CLASSES (REGISTERED), DESIGNED BY M. ALLEN, BUILDER, FOR MR. SYDNEY H. WATERLOW, NOW IN COURSE OF ERECTION IN MARK STREET, FINSBURY.

vard Mazas for unmarried workmen. The situation is well chosen, being in the centre of the manufacturing quarter of Paris. The proposed building is to be five stories high, and each floor is to be divided into smaller rooms completely separated, and to be approached by a spacious staircase. The ground floor is to be appropriated to a reception room or common hall, open to all the lodgers, to a restaurant or dining room, an office for the director, and an apartment for the house porter. The plan has been already prepared by the Government architect, and it shows that every room is to be well lighted, well ventilated in summer, and heated in winter. The common hall is likewise to be well heated, which will be a great advantage to the workmen, who can thus pass their evenings there in place of spending their time and money in a wine-shop. The first stone of this building, which will confer so many advantages on the workmen who have assisted in the decoration of Paris, will shortly be laid.

Home Correspondence.

ELEMENTARY EXAMINATIONS.

Sir,—No time should now be lost in preparing for the Elementary Examinations, according to the scheme of the Central Committee of Educational Unions. The experience last time in Yorkshire was, that many of the successful seniors became candidates for the certificates of the Society of Arts, and, no doubt, such a result will be largely increased on the next occasion. I annex a copy of the circular which is being forwarded to every Institute in the Yorkshire Union.

BARNETT BLAKE.

"WEST RIDING EDUCATIONAL BOARD for Conducting the Universities' Examinations, the Society of Arts' Examinations, Elementary Examinations, Science-Class Examinations, &c.

"Dear Sir,—With this you will receive some bills, announcing the Elementary Examinations, and Society of Arts' Examinations, which please exhibit in the most conspicuous places in your institute, so as to make them as public as possible.

"The Elementary Examinations may be held in your own place, requiring only the supervision of one or more responsible persons to certify that the written answers to the questions were the sole work of the candidates.

"All the members of your Institute are eligible to be candidates, either junior or senior, without reference to age or sex.

"Those who pass as seniors, if sixteen years of age, may be candidates at the Society of Arts' Examinations without any Preliminary Examination.

"Should any of your members desire to be candidates, please to send us their names and ages, and say whether they are juniors or seniors, before the 26th of January, and the required number of papers of questions will be sent to you in due time Send also the names of those who will superintend the Examinations.

"Each candidate must pay a fee of sixpence for the cost of papers and certificates. The latter will be headed, 'In Connection with the Society of Arts.'

"Should you determine to form a Local Committee for conducting the Society of Arts' Examinations in your Institute, please to send us their names, addresses, and occupations before the 1st of January next. If your Institute is not in connection with the Society of Arts, and has an income not exceeding £75 a year, your Local Board will be considered a branch of the Yorkshire Union of Mechanics' Institutes, and the candidates for the Society of Arts' Examination must pay a fee of 2s. 6d. each. We are, dear Sir, yours truly,

"BARNETT BLAKE, } Hon. Secs.
"JOHN PICKERING, }

"Mechanics' Institution, Leeds."

Proceedings of Institutions.

Barnsley Mechanics' Institute and Literary Society.—The Committee express their regret that the number of members for the last quarter shows a decrease of 30 upon the corresponding period of last year. They are unable to assign a satisfactory reason for this falling off, because, although the badness of trade may have had some influence, yet the increasing numbers of our population, and the more widely diffused knowledge of the benefits arising from membership with this Institute, ought to have counteracted the effects of commercial depression. Notwithstanding the diminished numbers, the receipts from subscriptions are slightly in excess of those for the preceding year. This anomaly arises from the persevering diligence of the gentleman who now collects the subscriptions at a given per centage for his labour, as contrasted with the irregular and fitful exertions of the voluntary canvassers for the previous years. The library department has received special attention during the past year. The nucleus of a reference library has been formed and placed in the book-case in the news-room. The circulating library has received an addition of 178 volumes, and a complete catalogue of all the books has been prepared, printed, and placed in the hands of the members. The issues from the library, as compared with those of the previous year, show an increase of 1,201 in books, and 315 in periodicals. The total number of books in the library now amounts to 1,784. The news-room has been well patronised. Both newspapers and periodicals have been chosen with great care, and the members, generally, seem pleased with the selection made. The course of lectures has afforded considerable gratification, not only to the members, but also to the public at large. Last year the expenses connected with the lectures, exclusive of any charge for the hall, amounted to £36 12s. 3d., while the receipts from the sale of season tickets, and the money paid at the doors, amounted to £41 14s. 3d. When the members of the Institute remember that they are admitted free to all the lectures, whether costly or not, they will be gratified to hear that, by the present mode of arrangement, this privilege is secured without the funds of the Institute suffering any serious loss. If the net loss upon the hall account should be charged to the lectures, then, at a cost of about two guineas per lecture, the members will have been supplied with an admirable course of instruction and amusement, and will have had ample return for the amount of their subscriptions. The balance sheet for last year shows that the receipts have been £187 4s. 9d.; the balance of cash at the bank is £29 11s. 5d.., being £27 3s. 7d. less than the Institute possessed last year. The chief cause of this deficiency is to be found in the lettings of the hall, which have realised £22 3s. 9d. less than they did in the former year. Throughout the past year trade has generally suffered such a severe depression, as fully to account for this unwelcome result. The actual net receipts of income from all sources are £15 8s. 9d. in excess of the previous year. The net expenditure, excluding the hall department, is £41 7s. more than in the former year. Of this sum, £22 3s. 10s. represents the extra amount of money spent in the purchase of books for the library. The following lectures were delivered in the season of 1861-62:—On "William Cobbett," by George Dawson, M.A.; on the "Power of Littles," by the Rev. S. Dyson, of Idle; on "Martin Chuzzlewit," by George Grossmith, Esq.; on "The Atmosphere," by Claude Wheelhouse, Esq., of Leeds; on "The Life, Times, and Writings of Lord Macaulay," by the Rev. W. E. Littlewood, M.A.; on "Ireland in 1861," by the Rev. Dr. Gatty, Vicar of Ecclesfield; on "The Beautiful in Nature and in Morals," by the Rev. G. Mather, of Leeds; on "The Romance of the Bourbon Family," by Dr. Daniel, of London; on "The Domestic Life of the Buonaparte Family," by Mrs. C. L. Balfour; on "The Sublime in Nature and in Morals," by the Rev. G. Mather, of Leeds; a musical entertainment, by A. Ramsden, Esq., of London; a dramatic reading, by Walter Montgomery, Esq.

Hitchin Mechanics' Institution and Public Library.—The annual meeting of the above institution was held at the Town Hall, on Wednesday, the 22nd of October last, the Rev. Lewis Hensley, M.A., President, in the chair, who opened the proceedings of the meeting by remarking that it was always pleasant to meet the members and friends of the Institution, but that feeling was much enhanced by knowing that the beautiful room in which they then met was entirely free from debt, and really their own. He then called upon Mr. Pollard, the Treasurer (in the absence of the Secretary), to read the report, in which the Committee congratulated the members upon its continued prosperity and usefulness. Since their last report was presented, they have been enabled (through the liberality of friends and members) to liquidate the entire debt that remained upon the library. The cost of the building, with all expenses connected with it, has amounted to £498 16s 3½d. The entries in the librarian's book are again most satisfactory. The library was closed for three months last year, for the arrangement and classification of the books. Upon comparing the same nine months of this year with the last, there is an increase of 964 entries. The increase of the entire twelve months amounts to 2,561 entries. The total number entered during the twelve months is 6,196. The Committee acknowledge with many thanks the handsome and valuable donation of an excellent copy of Clutterbuck's "History of Hertfordshire," in 3 vols., folio, by friends of the Institution, whose names are inscribed in the 1st volume; and also a copy of the "History of the British and Foreign Bible Society," in 2 vols., presented by Mr. John Thompson. Twelve lectures were delivered during the season, which were attended by 2,569 persons, making an average attendance of 214 to each lecture, showing an improvement in comparison with last year, when the average attendance amounted to 173 each evening. The cost of the lectures has been £40 10s. 11d., and the receipts at them £33 11s. 2d., showing a deficiency of £6 19s. 9d. Last year the loss sustained by the lectures amounted to £9 13s. 4d. The Committee beg to return their sincere thanks to those gentlemen who have so kindly aided them in this important and valuable service. They have also great pleasure in reporting the success of three of the members who have obtained certificates of merit, of the first and second classes, at the examination of the Society of Arts; one of them proved the best in his class, and obtained the first prize of £5. All who feel an interest in this subject are directed to the large programme of examinations for 1863, which is suspended in the library and reading-room. The Treasurer's report shows an income of £144 10s. 7½d., and an expenditure of £143 5s. 1½d., leaving a balance of £1 5s. 6d. in hand. After the adoption of the report, the members proceeded to the election of the officers for the ensuing year. The Rev. Lewis Hensley was elected president, Mr. J. Pollard, treasurer, and Mr. G. Latchmore, secretary. The President then proceeded to give the certificates of merit from the Society of Arts to the successful candidates, expressing a hope that the success of this year would stimulate many other members to follow so good an example, and devote themselves to self-improvement. A long discussion followed upon the propriety of raising the price of admission to the lectures, as they have shown a loss in the balance-sheet for the past three years, but it was finally decided that it was most prudent not to disturb the present charges, but to request the members to support the Committee by attending the lectures still more regularly than they have done heretofore. The proceedings terminated with a vote of thanks to the Chairman.

Preston Institution for the Diffusion of Knowledge.—The thirty-fourth annual report, read at the meeting of the members held in the theatre of the Institution, on the 7th October, John Goodair, Esq., President, in the chair, states that its career continues to be essentially useful, but the unprecedented gloom which has prevailed in Preston and the manufacturing districts generally has not been without its influence on the resources of the Institution. On this account, the movement for the extinction of the debt on the building, which last year made so auspicious a commencement, has been in abeyance. The debt, however, has been reduced from £400 13s. 3d. to £360 13s. 3d., by the amount of one year's rent of Dr. Shepherd's library, which, acting upon the practice of their predecessors, the council have appointed to the credit of the building fund. The number of subscribers during the year has been 513, being twenty less than in the previous year, and forty nine fewer than in 1859—60. The council regret that they are not able to make a more favourable report in this particular, the advantages offered by the Institution, as compared with the amount of subscription, being, they believe, second to none in the county. They have the pleasure, however, to state that, notwithstanding this drawbabk, the operations of the Institution generally are in a state of healthy activity. The number of issues of volumes for reading, last year, was 15,076, being a slight increase on the number of the preceding year. As a matter of literary statistics, the following analysis of works circulated may be of interest:—Arts and sciences, 1,715; history, 586; voyages and travels, 1,423; biography, 1,038; poetry and drama, 530; tales and novels, 7,268; miscellaneous literature, including magazines, 2,516; total, 15,076. The number of volumes added to the library during the year has been 194—by purchase 188, and by donation 6. The number of volumes now in the library is 6,760, including some of the most valuable works in every department of literature. The council felt that they would scarcely be justified in devoting any portion of the slender resources of the Institution to the engagement of lecturers. For some seasons past the attendance at the lectures has not been very encouraging, although they have been a heavy item of expense. The council considered also that as respects educational results, the objects of the Institution would be even better carried out by devoting the money to the enrichment of the library. On the general account, the balance against the Institution is larger by £20 2s. 6d. than last year. This is owing mainly to the receipts from the letting of the lecture theatre having been so very small as compared with previous years. Until there be a revival in the trade of the district, the council cannot hope to receive much revenue from this source. The classes have been well attended, and their working, on the whole, has been satisfactory to the council. The operations of the Penny Bank have thoroughly justified its establishment. As might have been expected, however, the depressed state of trade has caused a large withdrawal of deposits. The annual soirée was held in December last, and resulted in a small balance in favour of the Institution. In the third annual report of the School of Art the Committee express themselves highly gratified with the condition of the school. The gloom now spread over the cotton district has, as might be expected, to some extent influenced the numbers of the pupils, but very considerable progress has during the last year been made in the studies prosecuted, which, in some instances, are of an advanced character. The numbers attending the various classes are as follow:—Young ladies, 10; ladies, 24; school boys, 11; pupil teachers (male and female), 32; artisans, 49; total, 126. These numbers show a slight falling off compared with last year's report, but not to a greater extent than might have been expected from the cause above referred to. The decrease in the pupil teachers' class is owing also to some changes recently made by the Educational Committee of the Privy Council in their regulations in reference to the public schools. and these combined causes account for the reduction from 1,541 to 900 in the number of pupils in the public schools receiving instruction from the art teachers. It is hoped that with the return of better times the classes will be raised to at least their former numbers. Mr. Gilbert continues to hold the office of head master with great advantage to the school, and the duties of pupil teachers have been very satisfactorily discharged by Mr. William Duckett, and Miss Winifred Duckett, who succeeded Mr. Langley on his resignation at Christmas last. The examination of the school was conducted in June last, by Mr. S. A. Hart, R.A. 130 of the pupils attending the classes meeting at the school, and 124 of the pupils from the public schools, were present at the examination. Of the former, 15 obtained medals, 5 honourable mention, 13 second grade prizes, 13 certificate cards, and 7 first grade prizes. Of the pupils from the public schools, 1 obtained a second grade prize, 2 certificate cards, and 35 first grade prizes. Four pupils of the school obtained prize studentships, entitling the holder to free admission to the classes for the following year, and three who obtained such studentships at the previous examination this year obtained renewals. Some of the productions of the pupils were works of very considerable merit, and the result of the examination was satisfactory, showing a very general state of proficiency throughout the school, and exhibiting a very marked advance in the nature of the studies as compared with the previous examination. During the past year no efforts have been made to remove the debt from the school. The committee have abstained from appealing to the public for subscriptions, believing that, from the depression in trade now existing in the town, and the distress consequently prevailing on all sides, such an appeal would have been inopportune. The committee, however, believe that, under other circumstances, little difficulty will be experienced in relieving the school from the incumbrance now weighing upon it.

MEETINGS FOR THE ENSUING WEEK.

Mon. ...British Architects, 8.
Medical, 8½. Dr. Gibb, "Illustrations of the practical application of the Laryngoscope."
R. Asiatic, 3.
Tues. ...Civil Engineers, 8. Annual General Meeting.
Statistical, 8. Mr. James S. Hammick, "Recent Population Statistics of the British Colonies and Dependencies."
Pathological, 8.
Ethnological, 8.
Wed. ...Society of Arts, 8. Mr. Robert Hunt, F.R.S., "On the Mines and Minerals of the United Kingdom."
Geological, 8.
London Institution, 7.
Thurs....Royal, 8½.
Antiquaries, 8½.
Linnæan, 8. 1. Mr. A. H. Church, B.A., "On the form of the *Vascular fasciculi* in certain British Ferns." 2. Dr. J. D. Hooker, "Memoir on *Welwitschia.*"
Chemical, 8.
Numismatic, 7.
Philological, 8.
Royal Society Club, 6.

PATENT LAW AMENDMENT ACT.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[*From Gazette December 5th*, 1862.]

Dated 24th July, 1862.

2100. J. Leetch, St. Marylebone, and B. Mathew, St. James's, Middlesex—New and improved methods of protecting the surfaces of iron or other metal work from oxidation, incrustations, or accumulations of any kind, more especially in the cases of ships' bottoms, steam boilers, and machinery.

Dated 30th October, 1862.

2926. H. Eastwood, Elland, Yorkshire—Imp. in boilers and furnaces.

Dated 1st November, 1862.

2957. G. Haseltine, 100, Fleet-street—Imp. in coffins or burial cases. (A com.)

Dated 4th November, 1862.

2984. R. A. Brooman, 166, Fleet street—Imp. in the manufacture of fringes, and in machinery employed therein. (A com.)

Dated 10th November, 1862.

3024. G. H. Sanborn, 99, Cheapside—An improved wringing machine.

Dated 13th November, 1862.

3056. T. C. Eastwood and J. Eastwood, jun., Bradford—Imp. in machinery or apparatus for combing wool or other fibrous substances.

Dated 15th November, 1862.

3074. L. Croc, Aubusson, France—An improved ink to be used for the purposes of electric telegraphic printing or marking.

3076. J. Rimmer, Liverpool—Imp. in hansom cabs.

3080. H. B. Whitburn, Orrell Colliery, Lancashire—An improved method of purifying sand to be used in the manufacture of glass, and for other purposes where silica is used.

Dated 17th November, 1862.

3090. C. Littleboy, Straffan, Ireland—Imp. in implements for cultivating land.

Dated 18th November, 1862.

3092. J. Raphael, Upper Fountain-place, City-road—Imp. in umbrella, parasol, sunshade, and walking sticks.

3094. P. H. Klein, Paris—Machinery for turning or shaping metals or other substances.

Dated 21st November, 1862.

3126. C. Hadfield and W. A. Attkins, Hadfield, Derbyshire—Imp. in compressing or dressing bricks and tiles and other materials, and in machinery or apparatus to be employed for such purposes.

3128. J. R. Napier and W. J. M. Rankine, Glasgow—Imp. in boilers, and valvular mechanism for steam engines.

3130. D. Saul and M. Morris, Swinton, near Manchester—Imp. in the manufacture of crinoline skirts, and in the apparatus employed therein.

3132. T. Walker, Birmingham—Imp. in utilising sewage matters, and in the means or apparatus employed therein, part of which imp. is also applicable to raising and forcing other fluids.

3134. R. Swinburne, South Shields—Imp. in the manufacture of soda.

3136. J. Taylor, jun., Christchurch-road, Streatham, Surrey—Imp. in the manufacture of tiles or moulded blocks for building purposes.

3138. S. Deacon, Alma-street, New North-road, and C. Deacon, Rushton-street, St. John's-road—Imp. in tops, caps, and windguards for chimneys, and in apparatus for cleaning the same.

Dated 22nd November, 1862.

3140. W. E. Gedge, 11, Wellington-street, Strand—An improved elliptical compass. (A com.)

3142. M. Mishores, Newcastle-street, Whitechapel—Imp. in the construction of handles for umbrella, parasol, or other like sticks from soft canes.

3144. C. Powell, Birmingham—Imp. in watches and other timekeepers.

3146. A. V. Newton, 66, Chancery-lane—Imp. in machinery for cutting corks. (A com.)

Dated 24th November, 1862.

3150. W. Clark, 53, Chancery lane—Imp. in the means of obtaining vacuum or partial vacuum, as applied in the manufacture of paper. (A com.)

3154. E. Leigh, Manchester—Imp. in cotton gins.

3156. N. J. Amies, Manchester—An improved fabric to be employed as a substitute for elastic woven or "braided" webs, and imp. in the method of manufacturing the same.

Patents Sealed.

[*From Gazette, December 5th*, 1862.]

December 5th.

1714. J. Lovegrove.
1721. F. Giachosa.
1726. J. Kinlock & T. Edmeston.
1729. G. T. Jourdain.
1730. H. C. Jennings.
1734. J. Shand.
1738. W. Holland.
1749. A. A. Serenard.
1759. J. H. Glew.
1811. E. J. Davis.
1818. J. Bedford.
1840. J. Lawson.
1859. M. A. F. Mennons.
1913. T. Parker.
1938. G. H. Birkbeck.
2633. H. Hutchinson.

[*From Gazette, December 9th*, 1862.]

December 9th.

1736. J. D. Wake.
1737. H. Bland.
1739. W. Crook.
1743. B. W. Gerland.
1745. J. Hetherington.
1746. J. Ingham and W. P. Wood.
1752. A. Salviati.
1753. B. George.
1766. J. Robinson.
1768. T. Williams and H. Cox.
1769. J. Sawyer & G. Padgham.
1773. W. Bouch.
1774. R. A. Brooman.
1775. W. Wighton.
1779. J. F. Allan.
1782. W. J. Curtis.
1790. J. Nield and T. A. Nield.
1834. S. Holman.
1841. E. Edmonds.
1847. W. Barr.
1867. E. H. Huch and F. J. Windhausen.
2167. W. Norman.
2492. G. T. Bousfield.
2494. G. T. Bousfield.
2620. P. Wright.
2789. E. A. Cowper.
2811. H. Ledger and B. Williamson.

Patents on which the Stamp Duty of £50 has been Paid.

[*From Gazette, December 9th*, 1862.]

December 1st.

2717. C. A. Fournier.
2727. W. Betts.
2798. W. Betts.

December 2nd.

2745. E. A. Curley.
2767. J. Anderson.
2779. J. G. N. Alleyne.

December 4th.

2748. J. Hawkins & C. Hawkins.
4758. C. Sells.
2774. J. Combe.
2792. W. Boaler.
2810. S. W. Campain.
2918. A. V. Newton.

December 6th.

2789. J. Macintosh.
2790. J. Macintosh.
2791. J. Macintosh.
2834. W. Hulse.